

2. Rejection of Claims 31-53 Under 35 USC §102 in view of U.S. Patent No. 5,721,675 (Lee)

This rejection is respectfully traversed on the grounds that U.S. Patent No. 5,721,675 (Lee) fails to disclose or suggest a controllable shunt ("current distributing") device with feedback from an output voltage control device, and a series-connected isolating diode (as opposed to Lee's parallel-connected zener diode), as claimed. The provision of a controllable shunt device in parallel with the rectifier allows the voltage to be set in a linear fashion and controlled by a constant feedback circuit. The circuit of Lee has no such capabilities, nor could it be modified to include such capabilities without significant re-structuring of the circuit.

In Lee, a shunt circuit in the form of capacitor 410 is provided at either the input or output to the rectifier circuit 500 and, as usual, voltage is limited by a zener diode connected in parallel between the output of the rectifier (or the output of the shunt circuit) and the parallel connected capacitor 620. The output of rectifier 50 is stabilized by zener diode 610. This provides constant voltage limitation with no ability to vary the set voltage.

In order to obtain the circuit of the claimed invention, it would have been necessary for one of ordinary skill in the art to replace both the shunt circuit provided by capacitor 410 (and filter 200) of Lee *and* the voltage limiting zener diode 610, by a feedback-controlled shunt circuit provided at the output of the rectifier circuit. However, in order to do so, it would further have been necessary to solve the problem of variable impedances at the output of the circuit caused by operation of the shunt circuit in the absence of the voltage limiting zener diode. In a circuit such as the one shown in Lee, the parallel-connected zener diode 610 is absolutely **necessary** to prevent impedance losses through the capacitor 620, and replacement of the zener diode by a shunt circuit at the output of the rectifier would essentially make the circuit of Lee inoperative because there would be nothing to prevent reflux current from capacitor 620 from flowing back to the shunt circuit..

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In contrast, in the circuit of the invention, the impedance problem caused the inclusion of a feedback based controllable shunt device placed at the output of the rectifier is solved by placing a series-connected isolating diode between the filter capacitor and the shunt device. Furthermore, the shunt circuit may be in the form of an active element such as an SCR (Fig. 12) or chopper switch (Fig. 15), which, as a result of the isolation provided by diode 107, regulates the output voltage in the manner of a switch rather than an analog shunt circuit, further reducing heat losses due to short circuits caused by reverse flow of the output capacitor.

The claimed invention is thus structurally and functionally different from the circuit of Lee, and the circuit of Lee would require significant modifications in order to obtain the claimed invention which, unlike the circuit of Lee, eliminates the zener diode voltage limiter and instead provides voltage feedback control of the shunt circuit, the need for the zener diode being eliminating by the inclusion of an isolating diode between the shunt circuit and the parallel connected output capacitor. Because of the significant differences between the claimed circuit and the circuit of Lee, withdrawal of the rejection and expedited passage of the application to issue is requested.

Respectfully submitted,
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